

ABSTRACT OF THE DISCLOSURE

A layered photocatalytic/thermocatalytic coating oxidizes contaminants that adsorb onto the coating into water, carbon dioxide, and other substances. The layered coating includes a photocatalytic outer layer of titanium dioxide that oxidizes volatile organic compounds. The coating further includes an intermediate layer of Group VIII noble metal doped titanium dioxide that oxidizes low polarity organic molecules. An inner layer of gold on titanium dioxide oxidizes carbon monoxide to carbon dioxide. When photons of the ultraviolet light are absorbed by the coating, reactive hydroxyl radicals are formed. When a contaminant is adsorbed onto the coating, the hydroxyl radical oxidizes the contaminant to produce water, carbon dioxide, and other substances.

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